

described by Ruprecht as *A. pedatum*, var. *aleuticum*.¹ Ruprecht's material was from Unalashka and Kadiak Island, and specimens from that region are clearly identical with those from Mt. Albert. Occasional specimens from northwestern America and some from eastern Asia show very evident transitions to typical *A. pedatum*, and, although he failed in his diagnosis to point out some leading characteristics of the fern, it is probable that Ruprecht's treatment of the plant was best and that it should be known as *Adiantum pedatum* L., var. *aleuticum* Ruprecht.

GRAY HERBARIUM.

RECENTLY RECOGNIZED SPECIES OF CRATAEGUS
IN EASTERN CANADA AND NEW ENGLAND, — VI.

C. S. SARGENT.

(Continued from page 185.)

PUNCTATAE.

Stamens 20; anthers pale rose.

Crataegus umbratilis, n. sp. Leaves obovate to rhombic or sub-orbicular, acute or short-pointed and acuminate at the apex, gradually narrowed and concave-cuneate at the long entire base, sharply doubly serrate above, with straight glandular teeth, and divided above the middle into 3 or 4 pairs of short broad acute lobes, about half-grown when the flowers open at the end of May and then membranaceous, glabrous with the exception of a few pale hairs along the upper side of the midribs and veins, light yellow-green, smooth and lustrous above and pale below, and at maturity thin, glabrous, dark yellow-green and lustrous on the upper and paler on the lower surface, 6–7 cm. long and 5–7 cm. wide, with thin orange-colored midribs, and slender inconspicuous primary veins extending obliquely to the points of the lobes; petioles slender, broadly wing-margined at the apex, deeply grooved, glabrous, glandular, with occasional scattered persistent glands, 2–3 cm. in length; leaves on vigorous shoots more

¹ Ruprecht, Distrib. Crypt. Vasc. in Imp. Ross. 49 (1845).

coarsely serrate and more deeply lobed and often 3–8 cm. long and broad. Flowers 2–5 cm. in diameter, on long stout glabrous pedicels, in generally 5–12-flowered broad lax corymbs, the lower branches from the axils of upper leaves; calyx broadly obconic, glabrous, tinged with red, the lobes gradually narrowed, short-acuminate, finely glandular-serrate above the middle, green, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 20; anthers large, pale rose color; styles 5. Fruit ripening in September, on stout erect pedicels, in few-fruited clusters, subglobose to short-oblong, bright apple-green (September 19th), about 1 cm. in diameter; calyx prominent, with a wide deep cavity and small spreading and reflexed lobes hairy on the upper side and mostly persistent; flesh thin, green, dry and mealy; nutlets 5, full and rounded at the base, acute at the apex, rounded or occasionally obscurely ridged on the back, dark-colored, about 7 mm. long and 5–6 mm. wide.

A tree about 5 m. high, with a short trunk 20–25 cm. in diameter, covered with pale gray scaly bark, large spreading and ascending branches forming a wide open irregular head, and slender nearly straight branchlets marked by oblong pale lenticels, glabrous and deeply tinged with red when they first appear, soon becoming light orange-brown, light gray tinged with red in their second year, and armed with numerous slender nearly straight bright chestnut-brown shining spines 3.5–4.5 cm. long, elongated, much-branched, and very abundant on the trunk and branches.

Borders of Alder thickets in low moist ground in the shade of larger trees, Goddard estate near Litchfield, Litchfield County, Connecticut, *C. H. Bissell* (no. 67, type!), September 20, 1903, May, 1904; *Bissell* and *Sargent*, September 3, 1905.

PRUINOSAE.

Stamens 20; anthers pink.

Crataegus fusca, n. sp. Leaves ovate, acuminate, rounded, cuneate or almost truncate at the broad entire base, sharply often doubly serrate above, with straight glandular teeth, and divided into 4–6 pairs of narrow acuminate spreading lobes, nearly one-third grown when the flowers open about the 1st of June and then thin, yellow-green slightly tinged with red, and glabrous with the exception of a few scattered pale caducous hairs above and pale and glabrous below, and at maturity thin, bluish green and lustrous on the upper and paler blue-green on the lower surface, 4.5–7 cm. long and 4–5.5 cm. wide, with slender yellow midribs, and thin primary veins

arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, occasionally sparingly glandular, 2–3.5 cm. in length; leaves on vigorous shoots rounded or sometimes cordate at the base, coarsely serrate and more deeply lobed, with stout wing-margined glandular rose-colored petioles. Flowers about 2 cm. in diameter, on short slender glabrous pedicels, in usually 4–7-flowered corymbs, with linear acuminate glandular rose-colored bracts and bractlets mostly deciduous before the flowers open; calyx-tube broadly obconic, the lobes short, gradually narrowed, acuminate, minutely glandular on the margins, glabrous, reflexed after anthesis; stamens 20; anthers pale pink; styles 4 or 5. Fruit ripening the middle of October, on short stout erect pedicels, in few-fruited clusters, short-oblong, full and rounded at the apex, slightly narrowed at the base, dull brown, pruinose, 1–1.2 cm. in diameter; calyx prominent, with a short tube, a broad deep cavity and spreading and reflexed lobes dark red on the upper side below the middle; flesh thin, yellow-green, dry and mealy; nutlets usually 4 or 5, broad and rounded at the base, gradually narrowed and rounded at the apex, ridged on the back, with a high narrow ridge, light-colored, 7–8 mm. long and 4–5 mm. wide.

A tree with a short trunk and spreading branches forming a round-topped head, and slender nearly straight branchlets marked by oblong pale lenticels, orange-green more or less tinged with red when they first appear, bright chestnut-brown and lustrous during their first year and light gray tinged with red the following season, and armed with slender slightly curved purplish shining spines 4–5 cm. long.

Pastures near Burlington, Vermont, *W. W. Eggleston* (nos. 2282, 2346, 2874 type!), September and October 1901, May and June 1902, June 1903.

Anthers rose-color.

Stamens 15–20.

Crataegus Quinebaugensis, n. sp. Leaves rhombic, acuminate, cuneate and entire at the base, finely often doubly serrate above, with slender glandular teeth, and divided above the middle into 2 or 3 pairs of broad short acuminate lobes, nearly one-third grown when the flowers open about the 20th of May and then thin and glabrous, light yellow-green and very smooth above and pale bluish green below, and at maturity subcoriaceous, dark blue-green and lustrous on the upper and pale blue-green on the lower surface, 6–7 cm. long and 5–6 cm. wide, with slender yellow midribs, and thin primary veins extending obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, nearly terete, glandular, with minute dark red stipitate deciduous glands, 2–3 cm. in length; stip-

ules linear-obovate, glandular, fading rose color or brown, mostly fallen before the flowers open; leaves on vigorous shoots more coarsely serrate and more deeply lobed, often 8–10 cm. long and 7–8 cm. wide, with stout petioles conspicuously glandular through the season, and foliaceous lunate coarsely serrate persistent stipules. Flowers 1.6–1.9 cm. in diameter, on elongated slender glabrous pedicels, in usually 5–7-flowered corymbs, with linear-obovate acuminate glandular bracts and bractlets usually persistent until after the flowers open; calyx-tube broadly obconic, glabrous, the lobes wide, short-acuminate, usually dentate above the middle, with minute glandular teeth, reflexed after anthesis; stamens 15–20, usually 16–18; anthers pale rose color; styles 3–5. Fruit ripening in October and falling before the end of the month, on slender pendulous pedicels, in few-fruited clusters, oblong to slightly obovate, usually pointed and more or less angled at the base, gradually narrowed at the apex, light red or purplish, pruinose, 1–1.2 cm. long and 8–9 mm. wide; calyx little enlarged, with a short tube, a deep narrow cavity, and spreading and reflexed usually persistent lobes; flesh thin, hard and dry, greenish or yellowish white, sometimes tinged with red; nutlets 3 or 4, narrowed at the ends, acute at the apex, ridged on the back, with a low broad slightly grooved ridge, about 8 mm. long and 4–5 mm. wide.

A sparingly branched shrub 2–4 m. high, with long spreading and ascending stems covered with pale gray bark darker and rougher near their base, and stout zigzag branchlets marked by small oblong dark lenticels, orange-brown and glabrous when they first appear, dull olive or olive-brown during their first year, becoming gray-brown the following season, and armed with many slender slightly curved purplish shining spines 5–7 cm. long.

Near Hopeville, New London County, Connecticut, in the valley of the Quinebaug River, *C. B. Graves* (no. 57 type!), May, July and October 1904.

Stamens 10 or less.

CRATAEGUS BELLULA, Sarg., *Trees and Shrubs*, i. 111, t. 56. (1903.) I have referred to this species, known previously only in the neighborhood of Grand Rapids, Michigan, a large nearly aborescent plant discovered in Somerset, Massachusetts, by Mr. J. G. Jack (no. 6), May and September 1903. If this reference is correct *Crataegus bellula* is interesting as another instance of the occurrence of a species of this genus in remote regions without intermediate stations, for the country between southern Massachusetts and central Michigan has been so carefully examined for *Crataegus* that it is hardly prob-

able that such a distinct and beautiful plant as *C. bellula* could if generally distributed have escaped notice.

Crataegus incisa, n. sp. Leaves ovate-oblong, acuminate, cuneate or rounded at the entire glandular base, sharply doubly serrate above, with straight or incurved glandular teeth, and deeply divided into numerous narrow acuminate spreading sometimes reflexed lateral lobes, more than half grown when the flowers open from the 20th to the end of May and then membranaceous, light yellow green, smooth and glabrous above, and pale or glaucous and slightly hairy along the midribs and veins below, and at maturity subcoriaceous, dark blue-green and lustrous on the upper and pale-green on the lower surface, 5–8 cm. long and 4–6 cm. wide, with prominent yellow midribs, and slender obscure primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, nearly terete, yellow, sometimes glandular while young, with minute dark red deciduous glands, 2–3 cm. in length; leaves on vigorous shoots ovate, truncate or rounded at the broad base, coarsely serrate, 3-lobed by deep narrow sinuses, the terminal lobe incisely lobed, coriaceous, 7–9 cm. long and wide, with stout winged conspicuously glandular petioles, and foliaceous lunate long-pointed laciniately divided stipules. Flowers 1.8–2 cm. in diameter, on slender elongated glabrous pedicels, in lax 4–6-flowered corymbs, with linear acuminate glandular bracts and bractlets, fading brown and mostly deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from wide bases, acute and glandular at the apex, entire or finely glandular-serrate near the middle, glabrous, reflexed after anthesis; stamens 5–10; anthers pale rose color; styles usually 3, surrounded at the base by a narrow ring of pale hairs. Fruit ripening late in October, and persistent until after the fall of the leaves on erect or spreading pedicels, in compact few-fruited clusters, obovate, full and rounded at the apex, gradually narrowed to the base, green covered with a glaucous bloom, late in the season often becoming crimson or tinged with crimson, 1.3–1.5 cm. long and 1–1.2 cm. wide; calyx little enlarged, without a tube, and with a narrow shallow cavity and spreading lobes, their tips often deciduous from the ripe fruit; flesh thin, hard and green; nutlets 3, gradually narrowed to the rounded ends, ridged on the back, with a broadly grooved ridge, about 8 mm. long and 5 mm. wide.

A shrub or small tree 3–4 m. high, with slender stems, and stout slightly zigzag branchlets marked by small dark lenticels, green tinged with red when they first appear, soon becoming bright red-brown and very lustrous, and dark dull gray-brown in their second year, and armed with slender straight or slightly curved shining spines 3.5–5 cm. long.

In dry soil near ledges, Stratford, Fairfield County, Connecticut,

E. H. Eames (nos. 144 type! 3495 and 3595), June and September 1901, May and September 1903.

Crataegus Robbinsiana, n. sp. Leaves ovate, acute or acuminate, rounded, truncate or cordate at the entire or crenate base, finely doubly serrate above, with straight glandular teeth, and more or less divided into 4 or 5 pairs of spreading acuminate lateral lobes, when they unfold deeply tinged with red, glabrous below and furnished above with short white hairs, nearly fully grown when the flowers open from the middle to the 20th of May and then membranaceous, pale yellow-green and still hairy above and pale below, and at maturity thin but firm in texture, smooth and dark green on the upper, pale on the lower surface, 3–5 cm. long and 2.5–3.5 cm. wide, with slender yellow midribs, and thin primary veins extending obliquely to the points of the lobes, often turning orange color tinged with red in the autumn before falling; petioles slender, slightly wing-margined at the apex, glandular, with minute stipitate dark glands, 1.4–2 cm. in length; stipules linear to linear-falcate, acuminate, finely glandular-serrate, mostly deciduous before the flowers open; leaves on vigorous shoots broadly ovate, mostly long-pointed, cordate or rarely truncate at the base, more coarsely serrate, more deeply lobed and frequently 6–7 cm. long and 5–6 cm. wide, with stout reddish conspicuously glandular petioles 1–2 cm. long. Flowers 1.2–1.5 cm. in diameter, on slender glabrous pedicels, in 6–10-flowered corymbs, with linear glandular bracts and bractlets fading brown and mostly deciduous before the flowers open; calyx-tube broadly obconic, glabrous, the lobes gradually narrowed from wide bases, acuminate at the gland-tipped apex, entire or slightly and irregularly toothed near the middle, reflexed after anthesis; stamens 7–10; anthers light rose color; styles 4 or 5, surrounded at the base by a ring of pale tomentum. Fruit ripening from the first to the middle of October, on slender pedicels, in few-fruited erect clusters, depressed-globose, rather broader than high, dull red and slightly pruinose, becoming lustrous and about 1.2 cm. in diameter; calyx little enlarged, without a tube, and with a deep narrow cavity, and spreading appressed lobes bright red on the upper side below the middle and mostly persistent on the ripe fruit; flesh thin, hard, greenish white; nutlets 4 or 5, full and rounded at the base, narrow and rounded at the apex, ridged on the back, with a high ridge, 6–7 mm. long and 4–5 mm. wide.

A tree occasionally 10 m. high, with a tall trunk 20–25 cm. in diameter, covered with light gray closely appressed scales, comparatively small erect branches forming an open erect head, and slender slightly zigzag branchlets marked by numerous dark lenticels, green tinged with red and glabrous when they first appear, bright chestnut-brown and lustrous during their first winter and pale gray-brown the following season, and armed with many slender or occasionally

stout nearly straight bright red-brown shining spines 3-4 cm. long; usually smaller and sometimes shrubby in habit.

Burlington, Vermont, *W. W. Eggleston* (no. 3475 type!), October 1903, May 1904, (no. 3472) October 1903, *A. W. Edson*, May 1900. Putney, Vermont, *W. W. Eggleston* (nos. 3391 & 3392), May and September 1903, *W. H. Blanchard* (no. 46), May and September 1903; Westminster, Vermont, *W. H. Blanchard* (no. 49), September 1902, May 1903; *Blanchard* and *Sargent*, May 1905. North Walpole, New Hampshire, *W. H. Blanchard* (no. 48), May and September 1903.

This handsome and widely distributed species is named in memory of James Watson Robbins (1801-1879) in his time "the most critical student of the botany of New England and the northern Atlantic States."

***Crataegus levis*, n. sp.** Leaves ovate to oval, acute or acuminate, abruptly cuneate or rounded at the entire base, finely doubly serrate above, with straight or incurved glandular teeth, and slightly divided above the middle into 4 or 5 pairs of short acuminate lobes, when the flowers open during the last week of May thin, glabrous with the exception of a few soft hairs on the light yellow-green very smooth upper surface and pale or glaucous and glabrous below, and at maturity thin, but firm in texture, glabrous, blue-green above and pale blue-green below, 3.5-4.5 cm. long and 3-3.5 cm. wide, and on vigorous shoots sometimes 6 cm. long and 4-5 cm. wide, with very slender yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, nearly terete, glandular while young, with occasional minute dark red glands, often tinged with red early in the season, 2-3 cm. in length. Flowers 1.2-1.4 cm. in diameter, on stout elongated glabrous pedicels, in usually 5-8-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from wide bases, short, acuminate, obscurely serrate near the middle, glabrous, reflexed after anthesis; stamens 7-10; anthers deep rose color; styles 3 or 4. Fruit ripening the end of September, on drooping pedicels, in few-fruited clusters, obovate, full and rounded at the apex, gradually narrowed to the slender base, dull purple, very glaucous, 1.1-1.3 cm. long and 7-8 mm. wide; calyx little enlarged, with a wide shallow cavity, and spreading or reflexed serrate lobes dark red on the upper side toward the middle, their tips often deciduous from the ripe fruit; flesh thin, yellow, rather juicy; nutlets 3 or 4, usually 3, narrowed and rounded at the base, acute or acuminate at the apex, ridged on the back, with a high usually broad ridge, about 7 mm. long, and 4-5 mm. wide.

A slender shrub about 2 m. high, with small ascending stems and

branches covered with dark scaly bark, and slender nearly straight branchlets marked by small oblong lenticels, dull orange color and glabrous when they first appear, light chestnut-brown and lustrous during their first winter and dull reddish brown in their second year, and armed with slender nearly straight light chestnut-brown shining ultimately dull gray-brown spines 3-4 cm. long.

Moist rich pastures, Litchfield, Litchfield County, Connecticut, *C. H. Bissell* (no. 71 type!), September 1903, May 1904; *Bissell* and *Sargent*, September 1905.

TENUIFOLIAE.

Anthers rose color.

Stamens 10 or less.

Crataegus culta, n. sp. Leaves ovate, acuminate, broad and rounded at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided into 5 or 6 pairs of slender acuminate lobes, about half grown when the flowers open the middle of May and then dark yellow-green and roughened above by short white hairs and pale bluish green and glabrous below, and at maturity thick and firm, glabrous, dark blue-green on the upper and paler on the lower surface, 4-5 cm. long and 3-4 cm. wide, with stout midribs rose-colored below toward the base in the autumn, and slender obscure primary veins extending obliquely to the points of the lobes; petioles slender, grooved and sparingly villose while young on the upper side, soon glabrous, glandular, with minute dark often persistent glands, rose-colored in the autumn, 1.5-3 cm. in length. Flowers about 1.5 cm. in diameter, on slender elongated glabrous pedicels, in broad lax usually 10-12-flowered corymbs, with linear glandular caducous bracts and bractlets; calyx-tube narrowly obconic, glabrous, the lobes slender, long-pointed and acuminate at the rose-colored glandular apex, entire or sparingly dentate near the middle, glabrous, reflexed after anthesis; stamens 5-10; filaments rose color, persistent on the fruit; anthers dark rose color; styles 3 or 4. Fruit ripening and falling late in September, on slender drooping pedicels, in few-fruited clusters, short-oblong or ovate to subglobose, depressed at the insertion of the stalk, crimson, lustrous, marked by minute pale dots, 1-1.3 cm. long; calyx little enlarged with a narrow deep cavity, and spreading or reflexed lobes abruptly narrowed from broad bases, long-pointed, entire or obscurely and irregularly dentate, dark red on the upper side below the middle, mostly persistent on the ripe fruit; flesh thin, slightly juicy, greenish yellow; nutlets usually 3, rounded at the ends or, when 4, acute at the apex, ridged on the back, with a broad low grooved ridge, dark-colored, about 5 mm. long and nearly as wide.

A shrub 3-4 m. high, with long slender much branched stems forming an open irregular head, and slender nearly straight branchlets marked by crowded pale lenticels, dark green tinged with red when they first appear, becoming purple and rather lustrous during their first season and dull reddish brown the following year, and armed with short purplish shining ultimately gray spines 3-4 cm. long and persistent on the old branches and stems.

Rich moist hillsides, Shirley, Middlesex County, Massachusetts, *C. S. Sargent* (no. 5 type!), September 1902, *E. F. Thayer*, September 1904, May and June 1905. *Thayer* and *Sargent*, September 1905.

Crataegus Damei, n. sp. Leaves oblong-ovate or rarely oval, long-pointed and acuminate at the apex, rounded or cuneate at the entire base, sharply doubly serrate above, with slender glandular teeth, and divided into 5 or 6 pairs of narrow acuminate lobes usually pointing forward, deeply tinged with red when they unfold, nearly fully grown when the flowers open the middle of May and then membranaceous, yellow-green and roughened above by short rigid hairs and pale or glaucous and glabrous below, and at maturity very thin, dark blue-green and smooth or slightly roughened above and pale below, 4.5-5.5 cm. long and 3.5-4 cm. wide, with slender yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, grooved on the upper side, glabrous, 2-2.5 cm. in length; leaves on vigorous shoots broader in proportion to their length and often truncate at the base. Flowers about 1.5 cm. in diameter, on slender elongated glabrous pedicels, in compact usually 5-7-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes slender, entire, acuminate, red and glandular at the acuminate apex, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 10; anthers light pink; styles 2-4, surrounded at the base by a narrow ring of pale hairs. Fruit ripening at the end of September, on long slender drooping pedicels, in many-fruited clusters, oblong to obovate, gradually narrowed at the base, full and rounded at the apex, bright cherry red and lustrous, marked by numerous minute dots, 1.3-1.5 cm. long, about 8 mm. wide; calyx small, with a deep narrow cavity, and slender entire lobes red on the upper side below the middle and spreading or incurved; flesh thin, yellow, rather juicy; nutlets 2-4, narrowed and rounded at the base, acute at the apex, ridged on the back, with a high narrow ridge, about 7 mm. long and 4 mm. wide.

A shrub 4-5 m. high, with numerous slender spreading stems forming a wide open head, and very slender nearly straight branchlets marked by small dark lenticels, light orange-green and glabrous when they first appear, becoming chestnut-brown and somewhat lustrous during their first winter, dull reddish brown the following year, ulti-

mately ashy gray, and armed with occasional stout straight curved purplish spines 1.5–3 cm. long.

Banks of the Merrimack River near Lowell, Massachusetts, *Dame* and *Sargent*, September 1902, *C. S. Sargent*, May 1905.

This species, well distinguished by its very thin dark blue-green leaves and long narrow mostly pear-shaped fruits hanging on long slender stalks is named for the late Lorin Low Dame (1838–1903), one of the authors of *The Flora of Middlesex County, Massachusetts*, of *Typical Elms and other Trees of Massachusetts*, and of a *Handbook of the Trees of New England*, by whom it was first pointed out to me.

Crataegus serena, n. sp. Leaves ovate, acuminate, concave-cuneate or sometimes rounded at the broad base, finely often doubly serrate, with straight or incurved glandular teeth, and divided into 4 or 5 pairs of short broad acute spreading lobes, when they unfold deeply tinged with red especially on the lower surface and covered above with soft white hairs, about one-third grown when the flowers open from the 20th to the end of May and then thin, yellow-green and scabrate above and pale and glabrous below, and at maturity thin but firm in texture, dark dull yellow-green on the upper and paler on the lower surface, 5–6.5 cm. long and 3–5 cm. wide, with stout yellow midribs, and thin prominent primary veins arching obliquely to the points of the lobes; petioles slender, wing-margined at the apex, nearly terete, glabrous, glandular near the apex, with minute often persistent glands, 2–3 cm. in length; stipules linear-obovate, acute, glandular, fading brown, caducous; leaves on vigorous shoots long-pointed and divided by wide shallow sinuses, often 6–7 cm. long and wide, with stout conspicuously glandular rose-colored petioles. Flowers 1.5–1.7 cm. in diameter, on slender glabrous pedicels, in broad lax long-branched many-flowered crowded corymbs, with linear glandular caducous bracts and bractlets; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, glandular on the margins and at the apex with large dark red glands, glabrous, spreading or reflexed after anthesis; stamens usually 7; anthers rose-colored; styles 3. Fruit on long slender drooping pedicels, in few-fruited clusters, oblong, full and rounded at the ends, scarlet, lustrous, marked by large pale lenticels, about 1.5 cm. long and 1 cm. wide; calyx enlarged, with a deep narrow cavity, and incurved slightly serrate lobes mostly persistent on the ripe fruit; flesh yellow, soft and sweet; nutlets 3, gradually narrowed and rounded at the ends, ridged on the back, with a broad, high ridge, about 7 mm. long and 4–5 mm. wide.

A shrub sometimes 5–7 m. high, with numerous slender erect many-branched stems spreading into broad thickets, and slender nearly straight branchlets marked by small pale lenticels, dark green tinged with red when they first appear, becoming light chestnut-red

and rather lustrous in their first season and light gray-brown the following year, and armed with numerous slender nearly straight bright red-brown shining spines usually 2-3 cm. long.

Roadsides and pastures, Lenox, Berkshire County, Massachusetts, common, *C. S. Sargent*, September and October 1902, May 1904.

Crataegus Paddockeae, n. sp. Leaves oblong ovate to oval, long-pointed and acuminate at the apex, full and rounded or rarely cuneate at the glandular base, finely doubly serrate above, with straight glandular teeth, and slightly divided into 5 or 6 pairs of small narrow acuminate lateral lobes, when they unfold slightly tinged with red, roughened above by short white hairs and glabrous below, more than half grown when the flowers open about the 20th of May and then very thin, light yellow-green and scabrate above, pale and glaucous below, and at maturity thin but firm in texture, dark yellow-green, smooth and lustrous on the upper and pale on the lower surface, 5.5-7 cm. long and 4.5-5 cm. wide, with stout yellow midribs, and slender primary veins arching obliquely to the points of the lobes, petioles slender, slightly wing-margined at the apex, nearly terete, glabrous, glandular, with scattered persistent glands, rose-colored in the autumn, 2-2.5 cm. in length; leaves on vigorous shoots often cordate at the base, coarsely serrate, more deeply lobed, with broad, spreading lobes, thick and leathery, often 7-8 cm. long and broad, with dark rose-colored midribs and stout conspicuously glandular petioles. Flowers small (petals not seen), on slender elongated glabrous pedicels, in mostly 10-12-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate and red at the apex, entire, or sparingly glandular near the middle, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 10; anthers small, rose color; styles 3 or 4. Fruit ripening by the middle of September, on slender elongated reddish drooping pedicels, in few-fruited clusters, short-oblong to obovate, full and rounded at the apex, narrowed below, lustrous, 1-1.2 cm. long, 8-10 mm. wide; calyx little enlarged, with a wide deep cavity and closely appressed lobes slightly hairy on the upper side, persistent on the ripe fruit; nutlets 3 or 4, full and rounded at the base, gradually narrowed and rounded or acute at the apex, irregularly ridged on the back, with a high slightly grooved ridge, 6-7 mm. long and about 4 mm. wide.

A shrub 5-6 m. high, with numerous stems, spreading branches, and slender slightly zigzag branchlets marked by numerous small pale lenticels, dark orange-yellow and glabrous when they first appear, light chestnut-brown and very lustrous during their first winter and dull dark red-brown the following year, and armed with many slender straight or slightly curved bright chestnut-brown shining spines 4-6 cm. long and usually pointed toward the base of the branch.

Valley of the Passumpsic River, Essex County, Vermont, *W. W. Eggleston*, north of Lyndonville (no. 3400 type!), Bloomfield (no. 3406).

This species is named for Miss Isabel Monteith Paddock, curator of the botanical department of the Fairbanks Museum of Natural Science, St. Johnsbury, Vermont.

Crataegus Napaea, n. sp. Leaves oblong-ovate, abruptly narrowed and long-pointed at the acuminate apex, rounded at the gradually narrowed base, sharply often doubly serrate, with straight glandular teeth, and deeply divided into 4 or 5 pairs of acuminate spreading lobes, more than half-grown when the flowers open about the 20th of May and then membranaceous, dark yellow-green, covered with short white hairs, and smooth and lustrous above and pale below, and at maturity thin, yellow-green and lustrous on the upper and pale on the lower surface, 7–9 cm. long and 5–7 cm. wide, with thin orange-colored midribs, and slender primary veins arching obliquely to the points of the lobes; petioles slender, wing-margined at the apex, nearly terete, glandular, with scattered persistent glands, rose-colored in the autumn, 3.5–4 cm. in length; leaves on vigorous shoots longer-pointed, often gradually narrowed and cuneate at the base, coarsely serrate, deeply lobed, often 9–10 cm. long and occasionally not more than 5–6 cm. wide, with stout broadly winged petioles. Flowers small (petals not seen), on long slender glabrous pedicels, in lax many-flowered corymbs, the lower branches from the axils of upper leaves; calyx narrowly obconic, glabrous, the lobes slender, elongated, acuminate, red at the apex, entire or sharply serrate near the middle, glabrous, reflexed after anthesis; stamens 5–7; filaments persistent on the fruit; anthers rose-colored; styles 3 or 4, usually 4. Fruit ripening about the 20th of September, on long slender drooping pedicels, in few-fruited clusters, oblong-obovate, dull red, 1–1.2 cm. long and 8–9 mm. wide; calyx prominent, with a wide shallow cavity, and small closely appressed persistent lobes; flesh thick, yellow, dry and mealy; nutlets usually 4, gradually narrowed and acute at the ends, very slightly ridged on the rounded back, 6–7 mm. long and about 5 mm. wide.

An arborescent shrub 5–6 m. high, with numerous stout ascending much branched stems spreading into broad thickets, and slender nearly straight branchlets marked by numerous small pale lenticels, dark olive-green tinged with red when they first appear, light chestnut-brown and lustrous during their first winter and dull reddish brown in their second year, and armed with slender nearly straight or curved light chestnut-brown shining spines 4–5 cm. long.

Low moist soil near the banks of a deep ravine on the Goddard Estate, near Litchfield, Litchfield County, Connecticut, *C. H. Bissell*

(no. 68 type!), May and September 1904, *Bissell* and *Sargent*, September 1905; Cornwall, Connecticut, *C. H. Bissell* (no. 54), May and September 1903.

Crataegus viridimontana, n. sp. Leaves ovate, long-pointed and acuminate at the apex, gradually narrowed and concave-cuneate at the glandular base, finely doubly serrate above, with incurved glandular teeth, and deeply divided into 5 or 6 pairs of slender acuminate spreading lobes, when they unfold tinged with red and coated with silky white hairs more abundant on the lower than on the upper side, nearly half grown when the flowers open about the 25th of May and then membranaceous, light yellow-green and roughened above by short white hairs and pale and glabrous below, and at maturity thick and firm in texture, dark green, lustrous and scabrate on the upper and pale on the lower surface, 5–5.5 cm. long and 4–5 cm. wide, with slender yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, glabrous, glandular toward the apex, rose-colored when they first appear, soon yellow, 2.5–3 cm. in length; stipules linear, glandular, fading rose color, caducous; leaves on vigorous shoots oblong-ovate to rhombic, long-pointed, cuneate at the base, coarsely serrate, deeply divided into broad spreading lobes, 7–9 cm. long and 5–7 cm. wide, with stout broadly winged conspicuously glandular petioles, and foliaceous lunate coarsely glandular-serrate persistent stipules. Flowers 1.6 cm. in diameter, on long slender glabrous pedicels, in mostly 5–9-flowered corymbs, with linear glandular caducous bracts and bractlets; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from wide bases, elongated, acuminate and glandular at the apex, entire or sparingly glandular toward the middle, glabrous, reflexed after anthesis; stamens 5–10; anthers large, dark rose color; styles 2–4, usually 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening from the middle to the end of August and persistent for nearly another month, on slender elongated reddish pedicels, in few-fruited drooping clusters, short-oblong, full and rounded at the ends, crimson, slightly pruinose, marked by numerous small pale dots, 1.2–1.5 cm. long and about 1 cm. wide; calyx little enlarged, with a deep narrow cavity, and erect often incurved lobes only slightly glandular-serrate toward the base; flesh yellow, thick, soft and succulent; nutlets usually 4, gradually narrowed at the ends, rounded at the base, often acute at the apex, prominently ridged on the back, with a wide grooved ridge, dark-colored, 6–7 mm. long and about 5 mm. wide.

A shrub 5–7 m. high, with slender ascending stems forming an open irregular head, and stout nearly straight branchlets marked by numerous small pale lenticels, orange-green and glabrous when they first appear, bright chestnut-brown and very lustrous during their first winter, becoming pale gray-brown, and armed with numerous

stout nearly straight light chestnut-brown shining spines 3-3.5 cm. long.

In shady upland woods, East Middlebury, Vermont *Ezra Brainerd* (no. 109 type!), July and September 1900, May, July and August, 1901.

This species differs from *C. matura*, Sarg., to which it was first doubtfully referred, in its larger and more deeply lobed and much thicker leaves, larger fruit, and in its habit. As noted by President Brainerd *C. viridimontana*, more than any other species of western Vermont, grows in woods in the dense shade of other trees.

Stamens 18-20.

***Crataegus Edsoni*, n. sp.**

Crataegus matura, Sarg., RHODORA, iii. 24 (1901) so far as relates to the flowers (see RHODORA, v. 144).

Leaves oblong-ovate to oval, acuminate, gradually narrowed and rounded or cuneate at the base, sharply often doubly serrate, with straight or incurved glandular teeth, and divided above the middle into 4 or 5 pairs of short broad acuminate spreading lobes, when they unfold deeply tinged with red and roughened above by short white hairs and sparingly villose below along the midribs and veins, when the flowers open during the last week in May membranaceous, light yellow-green above and pale below, and at maturity thin, dark yellow and smooth on the upper and paler on the lower surface, 6-8 cm. long and 5-6 cm. wide, with slender yellow midribs, and thin veins extending obliquely to the points of the lobes, turning dull orange color early in the autumn; petioles slender, narrowly wing-margined at the apex, nearly terete, glandular above the middle, with large persistent glands, 2-3 cm. in length; stipules linear, acuminate, glandular, caducous, leaves on vigorous shoots long-pointed, coarsely serrate, more deeply lobed, often 8-9 cm. long and 7 cm. wide, with stout petioles broadly winged to below the middle and often rose-colored toward the base in the autumn. Flowers about 1.8 cm. in diameter, on long slender glabrous pedicels, in compact usually 7- or 8-flowered corymbs, with linear-obovate glandular bracts and bractlets; calyx-tube narrowly obconic, glabrous, the lobes slender, red and glandular at the acuminate apex, entire or occasionally dentate near the base, glabrous, reflexed after anthesis; stamens 18-20; filaments persistent, dark red and conspicuous on the fruit; anthers pink; styles 3-5, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening early in September, on slender drooping reddish pedicels, in many-fruited clusters, subglobose to short-oblong on obovate, bright cherry red, lustrous, marked by small pale dots, 1.3-1.5 cm. in diameter; calyx little enlarged, with a broad deep cav-

ity, and small closely appressed lobes dark red on the upper side below the middle, often deciduous from the ripe fruit; flesh thin, yellow, acidulous, of agreeable flavor; nutlets 3-5, narrowed and rounded at the ends, ridged, with a low narrow ridge, or rounded and grooved on the back, about 7 mm. long and 4-5 mm. wide.

A broad shrub, with spreading stems 2-3 m. high forming large clumps, slender nearly straight branchlets marked by small pale lenticels, light orange-yellow more or less tinged with red and glabrous when they first appear, dark orange-brown and lustrous in their first season and dull grayish or reddish brown the following year, and armed with numerous stout nearly straight bright chestnut-brown shining spines 2.5-3.5 cm. long.

Pastures in low moist soil, Burlington, Vermont, *A. W. Edson*, May 1900, *W. W. Eggleston* (nos. 2280 & 2870 type!), September 1901, May 1902, (nos. 2344 & 3476), May and October 1903; Westminster, Windham County, Vermont, *W. H. Blanchard* (no. 78), May and September 1903; North Walpole, Cheshire County, New Hampshire, *W. H. Blanchard* (no. 34), September 1902, May 1903, *W. W. Eggleston* (no. 2928), October 1902, May and September 1903; Lansingburg, Rensselaer County, New York, *Charles H. Peck* (no. 15 b), May and September 1903.

Crataegus Edsoni appears to be most closely related to *C. Forbesae*, Sarg., of central Massachusetts and Connecticut, differing from that species in its thinner and more deeply lobed leaves, pink, not dark red, anthers, and larger fruit. It is named for its discoverer, the late Arthur Woodbury Edson, a student at the University of Vermont and at the time of his death in June 1905 assistant physiologist in the Bureau of Plant Industry of the Department of Agriculture of the United States, in charge of experiments in Texas in breeding cotton. (See *Science*, n. ser. XXII. 61.)

MOLLES.

Stamens 10; anthers pale pink.

Crataegus lauta, n. sp. Leaves ovate, acuminate, broad and rounded or truncate or occasionally cuneate at the entire base, sharply doubly serrate above, with straight glandular teeth, and slightly divided into 5 or 6 pairs of small acuminate lateral lobes, about $\frac{1}{3}$ grown when the flowers open from the 15th to the 20th of May and then membranaceous, yellow-green and roughened above

by short white hairs and villose below along the midribs and veins, and at maturity thin, bluish green and scabrate on the upper and yellow-green on the lower surface, 6-7 cm. long and 5-6 cm. wide, with stout yellow midribs, and slender sparingly villose or pubescent primary veins; petioles slender, wing-margined at the apex, nearly terete, villose through the season, tinged with rose color at the base in the autumn, 2.5-3 cm. in length; stipules lanceolate, glandular, caducous; leaves on vigorous shoots slightly cordate at the broad base, coarsely serrate, more deeply lobed, thicker, often 10-12 cm. long and 8-9 cm. wide, with stout broadly winged conspicuously glandular petioles, and foliaceous lunate coarsely serrate persistent stipules. Flowers 2 cm. in diameter, on slender elongated villose pedicels, in compact hairy usually 8-12-flowered corymbs, with oblong-obovate to linear glandular bracts and bractlets mostly persistent until the flowers open; calyx tube narrowly obconic, clothed with matted pale hairs, the lobes broad, acuminate, coarsely glandular serrate usually only below the middle, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 10; anthers pale pink; styles 5, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening at the end of September, on stout slightly villose drooping pedicels, in few-fruited clusters, short-oblong to oblong, full and rounded and pubescent at the ends, slightly concave at the insertion of the pedicels, bright orange-red, lustrous, marked by numerous small dark dots, 1.6-2 cm. long and 1.5-1.8 cm. wide; calyx only little enlarged, with a deep narrow cavity, and erect laciniately glandular-serrate lobes rose-colored on the inner side toward the base and persistent on the ripe fruit; flesh thick, yellow, slightly juicy, firm and hard; nutlets 5, narrow and rounded at the base, acute at the apex, slightly and irregularly ridged on the back, 8-9 mm. long and 5-6 mm. wide.

A pyramidal arborescent shrub, with erect stems covered with ashy gray bark, small spreading and ascending branches, and stout slightly zigzag branchlets marked by many small lenticels, green slightly tinged with red and sparingly villose when they first appear, soon glabrous and dark olive green and lustrous, light olive green in their second season, and armed with many stout nearly straight light chestnut-brown shining spines 4-5 cm. long.

The description of this plant is drawn from a specimen cultivated in Olmsted Park, Boston. This is one of 700 plants, all similar in habit and foliage and in the characters of the flowers and fruit planted in the Boston parks and raised about fifteen years ago at the Framingham nurseries in South Framingham, Massachusetts, from seeds produced by a plant still growing in the Harvard Botanic Garden. The origin of this plant is unknown. It is one of a collec-

tion of thorns, however, planted by me in the garden perhaps about 1875 and, like other trees and shrubs planted there at that time, it was probably raised from seeds at the Arnold Arboretum.

FLABELLATAE.

Stamens 5 ; anthers rose color.

Crataegus ampla, n. sp. Leaves ovate, acuminate, rounded, truncate or rarely cuneate at the base, sharply often doubly serrate, with slender straight glandular teeth, and divided into 5 or 6 pairs of broad acuminate lateral lobes, slightly tinged with red and villose on the upper surface when they unfold, nearly half grown when the flowers open about the 20th of May and then membranaceous, light yellow-green and roughened above by short lustrous white hairs and pale and glabrous below, and at maturity thin, dark yellow-green and scabrate on the upper and paler on the lower surface, 6-7 cm. long and 5-6.5 cm. wide, with stout yellow midribs, and slender primary veins arching obliquely to the points of the lobes ; petioles slender, nearly terete, glabrous, glandular near the apex, with occasional minute usually persistent glands, rose-colored in the autumn, 1.5-3 cm. in length ; stipules oblong-obovate, often falcate, glandular, fading brown, caducous ; leaves on vigorous shoots truncate or slightly cordate at the base, more coarsely serrate and more deeply lobed, and 7-8 cm. long and broad. Flowers about 1.5 cm. in diameter, on slender elongated glabrous pedicels, in usually 7-10-flowered corymbs, with oblong-obovate to linear glandular rose-colored bracts and bractlets ; calyx-tube broadly obconic, glabrous, the lobes wide, foliaceous, acuminate, coarsely laciniately serrate, glandular, with large dark red glands, glabrous on the outer, sparingly villose on the inner surface, spreading or reflexed after anthesis ; stamens 5 ; anthers dark rose color ; styles 3, surrounded at the base by a broad ring of hairy tomentum. Fruit ripening early in October, on slender drooping pedicels, in few-fruited clusters, obovate, rounded at the apex, gradually narrowed to the base, bright cherry red, lustrous, marked by small pale dots, about 1.2 cm. long and 1 cm. wide ; calyx little enlarged, with a broad deep cavity and spreading appressed coarsely serrate lobes, their tips often deciduous from the ripe fruit ; flesh thin, yellow, dry and mealy ; nutlets 3, narrowed and rounded at the ends or acute at the apex, ridged on the back, with a broad high deeply grooved ridge, about 8 mm. long and 4-5 mm. wide.

A shrub 4-5 m. high, with numerous stout ascending many-branched stems covered with dark gray bark and forming a broad round-topped compact head, and slender, slightly zigzag branchlets marked by small oblong pale lenticels, dark orange-green when they

first appear, becoming bright chestnut-brown and very lustrous, in their first season, gray tinged with red the following year and ultimately ashy gray, and armed with slender straight or slightly curved bright chestnut-brown shining spines 3-4 cm. long.

Rocky pastures near Balance Rock, Lanesborough, Berkshire County, Massachusetts, *C. E. Faxon*, September 1899, *C. S. Sargent*, October, 1902, May 1904.

The relationship of this species is with the widely distributed *C. Holmesiana*, Ashe, from which it differs in its broad-ovate, not oval leaves, larger flowers and obovate later-ripening fruit.

ANOMALAE, Sarg. RHODORA, iii. 29 (1901).

Leaves cuneate, thickish to subcoriaceous, scabrate above while young; petioles slender, elongated. Flowers in many-flowered corymbs; anthers rose-colored or pink. Fruit short-oblong, orange-scarlet, 1-1.4 cm. in length; nutlets occasionally furnished with obscure ventral depressions. Mostly arborescent shrubs, all of western New England, eastern New York and the St. Lawrence valley near Montreal.

To this group, which is intermediate between the *Tomentosae* and the *Coccineae*, may be referred in addition to the following *C. asperifolia*, Sarg., *C. scabrida*, Sarg., *C. Brainerdi*, Sarg., and *C. Egglestoni*, Sarg.

Stamens 20.

***Crataegus Seelyana*, n. sp.** Leaves obovate to oval, acuminate and often short-pointed at the apex, gradually narrowed and concave-cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided above the middle into 4 or 5 pairs of short spreading acuminate lobes, when they unfold coated above with short white lustrous hairs and glabrous below, about half-grown when the flowers open at the end of May and then thin, yellow-green and slightly roughened above and pale below, and at maturity thick, glabrous, smooth and dark yellow-green on the upper, and pale or glaucous on the lower surface, 5-6.5 cm. long and 3.5-5 cm. wide, with stout yellow midribs, and slender veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, slightly grooved, glabrous, sparingly glandular, about 2 cm. in length; stipules linear, acuminate, glandular, bright rose color, caducous; leaves on vigorous shoots abruptly long-pointed, often rounded at the broad base, more deeply lobed, sometimes 6-7 cm. long and 4-5 cm. wide. Flowers 1.8 cm. in diameter, on slender

elongated glabrous pedicels, in usually 12-15-flowered corymbs, with linear-obovate to lanceolate glandular bracts and bractlets, bright rose color like the inner bud-scales and deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes glandular-serrate usually only above the middle, or occasionally nearly entire, glabrous, reflexed after anthesis: stamens 20; anthers pale pink; styles 3, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening at the end of September, on slender pedicels, in few-fruited clusters, short-oblong, lustrous, dull orange-red, about 1 cm. long and 7 mm. wide; calyx prominent, with a broad deep cavity, and appressed lobes mostly deciduous from the ripe fruit; flesh thin, yellow, dry and mealy; nutlets 3, rounded at the ends, slightly ridged on the back, with a broad low ridge, sometimes slightly hollow on the inner faces, 7-8 mm. long and 4-5 mm. wide.

An arborescent shrub 3-4 m. high, with ascending stems and stout nearly straight branchlets marked by small pale lenticels, deeply tinged with red and glabrous when they first appear, light chestnut-brown and very lustrous during their first winter and dark gray the following year, and armed with many stout nearly straight light chestnut-brown shining spines 2.5-5 cm. long.

Roadsides near Middlebury, Vermont, *Ezra Brainerd* (no. 6 A), May and September 1900, May 1901.

Formerly referred to *C. Brainerdi*, Sarg., but now distinguished from that species by the shape of the leaves, the color of the anthers the smaller fruits and by the more arborescent habit. It is named for Henry Martin Seely (1828-), for many years professor of chemistry and natural history in Middlebury College, teacher of botany and distinguished paleontologist.

Stamens 7-10.

Crataegus cyclophylla, n. sp. Leaves broadly ovate to suborbicular or rarely rhombic, short-pointed and acuminate at the apex, cuneate and entire at the base, sharply doubly serrate above, with straight or incurved glandular teeth, and slightly divided above the middle into 4 or 5 pairs of slender acuminate lobes, faintly tinged with red when they unfold, about half-grown when the flowers open the 1st of June and then thin, light yellow-green and somewhat roughened above by short white hairs and pale and glabrous below, and at maturity thick to subcoriaceous, dark yellow-green, lustrous, smooth or still slightly rough on the upper and pale on the lower surface, 5-6 cm. long and 4-5.5 cm. wide, with thick yellow midribs, and stout primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, grooved on the upper

side, glabrous, glandular toward the apex, with minute deciduous glands, often rose color in the autumn, 2–2.5 cm. in length; stipules linear, acuminate, glandular, fading brown, caducous; leaves on vigorous shoots suborbicular to broad-obovate, coarsely serrate, only slightly lobed, subcoriaceous, often 6–7 cm. long and wide, with stout glandular petioles. Flowers 1.6–1.8 cm. in diameter, on slender glabrous pedicels, in compact usually 12–15-flowered corymbs, with linear glandular rose-colored bracts and bractlets; calyx-tube narrowly obconic, acuminate and red at the apex, glandular with minute dark red stipitate glands, reflexed after anthesis; stamens 7–10; anthers rose color; styles 3 or 4. Fruit ripening the end of September and persistent until winter, on slender reddish pedicels, in drooping few-fruited clusters, subglobose to short-oblong, orange-red, marked by small pale dots, 1.2–1.4 cm. long and about 1 cm. wide; calyx only slightly enlarged, with a wide deep cavity and spreading red lobes, their tips often deciduous from the ripe fruit; flesh thin, yellow, dry and mealy; nutlets 3 or 4, full and rounded at the ends, ridged on the back, with a high rounded ridge, 7–8 mm. long and 4–5 mm. wide.

An arborescent shrub 4–5 m. high, with ascending stems 5–7 cm. in diameter near the ground, and stout nearly straight branchlets marked by small oblong pale lenticels, light orange-green and glabrous when they first appear, light orange-brown and very lustrous during their first winter and dark gray-brown the following year, and armed with numerous stout nearly straight bright chestnut-brown and shining ultimately dull gray-brown spines 3–3.5 cm. long.

Roadsides, New Haven, Addison County, Vermont, *Ezra Brainerd* (no. 16a), June and September 1900, May 1901; *Brainerd* and *Sargent*, Sept. 1900.

The relationship of this species is with *C. Egglestoni*, Sarg., from which it differs in its much thicker semiorbicular leaves, larger flowers, glabrous corymbs and calyx-lobes, larger fruits and darker-colored nutlets, with dorsal ridges without grooves or only slightly grooved, and in the color of the branchlets and the length and color of the spines.

***Crataegus Ideae*, n. sp.** Leaves, oval to ovate or obovate, short-pointed and acute at the apex, concave-cuneate and entire at the base, finely and occasionally doubly serrate above, with incurved conspicuously glandular teeth, and slightly divided above the middle into broad acute lobes, faintly tinged with red when they unfold, more than half grown when the flowers open at the end of May and then thin, light yellow-green and covered above by short white hairs and pale and glabrous below with the exception of a few axillary hairs, and at

maturity subcoriaceous, bright green, lustrous and sparingly hairy along the midribs on the upper and pale yellow-green and glabrous on the lower surface, 4–5 cm. long and 3.5–4 cm. wide, with stout yellow midribs rose-colored below toward the base, and slender prominent primary veins extending obliquely to the points of the lobes; petioles slender, narrowly wing-margined at the apex, grooved and villose on the upper side, glandular, with bright red mostly deciduous glands, rose-colored in the autumn, 1.5–2.5 cm. long; stipules oblong, acute, glandular, fading rose color, caducous; leaves on vigorous shoots broadly ovate, abruptly pointed or occasionally cuneate at the base, often 4 or 5 cm. long and 4 cm. wide. Flowers about 1.5 cm. in diameter, on elongated slender pedicels covered with long scattered white hairs, in wide lax many-flowered hairy corymbs, with oblong-obovate to linear bright rose-colored glandular bracts and bractlets mostly persistent until after the flowers have opened; calyx-tube narrowly obconic, glabrous or sparingly villose near the base, the lobes broad, gradually narrowed to the red glandular acuminate apex, obscurely serrate near the middle, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 10; anthers light pink; styles 3 or 4. Fruit ripening the middle of September, on stout slightly hairy erect red pedicels, in few-fruited clusters, short-oblong to subglobose, crimson, marked by large pale dots, about 1 cm. in diameter; calyx prominent, with a broad deep cavity and spreading lobes glandular-serrate above the middle, dark red and villose on the upper side, mostly persistent on the ripe fruit; flesh yellow, dry and mealy; nutlets 3 or 4, full and rounded at the ends, slightly ridged on the back, with a low narrow ridge, sometimes obscurely and irregularly pitted on the inner face, light-colored, about 7 mm. long and 4–5 mm. wide.

A tall much branched shrub forming wide thickets, with slender nearly straight branchlets marked by occasional large pale lenticels light yellow-green more or less tinged with red and nearly glabrous when they first appear, soon becoming bright chestnut-brown, dull reddish brown in their second and ashy gray in their third year, and armed with slender straight or slightly curved bright chestnut-brown shining spines 4.5–6 cm. long.

Hillside pastures at an altitude of about 500 metres, Concord, Essex County, Vermont; very abundant. *W. W. Eggleston* (nos. 3404, 3405 and 3405 A, type!), May and September 1903 and May 1905.

This species is named for Miss Mary Ellen Ide of the Fairbanks Botanical Museum, St. Johnsbury, Vermont.

COCCINEAE.

Stamens 10 or less.

Anthers white.

CRATAEGUS GRAVESII, Sarg. *RHODORA*, v. 160 (June 1903). An older name for this species is *C. Dodgei*, Ashe, *Jour. Elisha Mitchell Sci. Soc.* xix. 26 (March 1903). It is now known to range from Middlesex and Worcester Counties, Massachusetts (Shirley and Lancaster, *E. F. Thayer*) to western New York, and through Ontario to eastern Michigan, and to occur in eastern Pennsylvania.

Crataegus praetermissa, n. sp. Leaves broadly ovate to sub-orbicular or rarely oval, short-pointed and acuminate at the apex, broad, rounded or truncate or gradually narrowed and concave-cuneate at the glandular base, finely and often doubly serrate above, with straight gland-tipped teeth, and deeply divided into 4 or 5 pairs of slender acuminate lobes, more than half-grown when the flowers open the middle of May and then thin, yellow-green, lustrous and roughened above by short white hairs and paler and villose below especially along the midribs and veins, and at maturity thin but firm in texture, dark yellowish green, smooth and lustrous on the upper and pale and still villose on the lower surface along the slender yellow midribs, and thin veins arching obliquely to the points of the lobes, 5-6 cm. long and often as broad as long; petioles slender, slightly wing-margined at the apex, grooved on the upper side, glandular, with generally persistent glands, at first densely villose, becoming puberulous or nearly glabrous, 2-3 cm. in length. Flowers on short stout densely villose pedicels, in usually 5-7-flowered hairy corymbs; calyx-tube narrowly obconic, thickly coated with matted pale hairs, the lobes broad, acuminate, finely glandular-serrate, densely villose on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 5-10; anthers white; styles 3 or 4. Fruit ripening about the middle of September and remaining on the branches until early in October, on long slender drooping sparingly hairy reddish pedicels, in few-fruited clusters, short-oblong to ovate, crimson, marked by small pale dots, hairy especially at the ends, 1-1.2 cm. long, 8-9 mm. in diameter, calyx little enlarged, with a wide deep cavity and spreading closely appressed villose lobes, their tips often deciduous from the ripe fruit; flesh thin, yellow, green, dry and mealy; nutlets 3 or usually 4, rounded at the base, gradually narrowed and rounded at the apex, only slightly ridged on the narrow back, about 7 mm. long and 4-5 mm. wide.

A shrub 2-3 m. high, with slender erect intricately branched stems, and very slender nearly straight branchlets marked by oblong pale lenticels, light green and thickly coated with matted pale hairs

when they first appear, soon glabrous and light bright chestnut-brown and very lustrous during their first year, becoming dull reddish brown the following season, and armed with slender straight chestnut-brown shining spines 3-5 cm. long.

Rocky borders of woods, eastern base of Marsh Hill, Ferrisburg, Addison County, Vermont, *Ezra Brainerd* (no. 17 b type!), August 1900, October 1901, 1903, *Brainerd and Sargent*, September 1905, *W. W. Eggleston* (no. 3338), May 1903.

Formerly referred to *C. coccinea*, Linnaeus, *C. praetermissa* differs from that species in its much thinner broader and more deeply lobed leaves and fewer-flowered corymbs, in its narrow pointed and only slightly ridged nutlets, and in its hairy fruit. It resembles *C. Faxoni*, Sarg., in the general shape of the leaves, but the leaves of *C. Faxoni* are much thicker, less deeply lobed and more hairy on the two surfaces while young, the pedicels are longer and soon glabrous, the fruit is larger, and the nutlets are longer, with more prominent dorsal ridges.

Anthers rose color or pink.

Crataegus propria, n. sp. Leaves ovate, acuminate, rounded or cuneate at the entire base, finely and often doubly serrate above, with incurved glandular teeth, and slightly divided above the middle into 4 or 5 pairs of broad acuminate spreading lobes, tinged with red when they unfold, about half grown when the flowers open the middle of May and then thin, yellow-green and covered above by short white lustrous hairs and pale and glabrous below, and at maturity thin and firm, glabrous, dark dull yellow-green on the upper, pale on the lower surface, 4-5 cm. long and 3-4 cm. wide, with slender yellow midribs sometimes tinged with red toward the base, and thin primary veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, slightly grooved, pubescent while young, soon becoming glabrous, glandular toward the apex, with minute dark stipitate glands; usually rose color in the autumn, 1.6-2 cm. in length; stipules linear, glandular, fading brown, caducous. Flowers on slender pedicels coated with matted pale hairs, in compact usually 9-12-flowered corymbs, with linear acuminate rose-colored bracts and bractlets; calyx-tube narrowly obconic, glabrous except at the base, the lobes slender, acuminate and red at the apex, glandular on the margins, glabrous on the outer, puberulous on the inner surface, reflexed after anthesis; stamens 5; anthers pale rose color; styles 2 or 3. Fruit ripening at the end of September and soon falling, on slender glabrous reddish pedicels, in small drooping few-fruited clusters, oblong, sometimes slightly ovate, full and rounded at the ends,

scarlet, lustrous, marked by small pale dots, 1-1.2 cm. long, 7-8 mm. wide; calyx prominent, with a narrow deep cavity, and reflexed closely appressed lobes pubescent on the upper side and often deciduous from the ripe fruit; flesh thick, orange color, becoming soft or succulent; nutlets usually 2, rounded at the ends or, when 3, acute at the apex, ridged on the back, with a high narrow ridge, about 7 mm. long and 5 mm. wide.

A shrub 3-5 m. high, with numerous stout ascending stems forming a broad round-topped head, and slender nearly straight branchlets marked by oblong pale lenticels, dark orange color and glabrous or slightly villose when they first appear, soon glabrous, bright chestnut-brown and lustrous during their first winter and dull gray-brown the following year, and armed with stout slightly curved bright chestnut-brown shining ultimately dull gray-brown spines 3-3.5 cm. long.

Low moist pastures, South Lancaster, Massachusetts, *E. I. Thayer* (no. 3, Parker Pasture, type!), September 1902, May and August 1903.

Crataegus Websteri, n. sp. Leaves oval, or sometimes oblong-obovate on vigorous shoots, acute or acuminate, gradually narrowed and concave-cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided above the middle into 3 or 4 pairs of small spreading acuminate lobes, nearly fully grown when the flowers open late in May and then thin, light yellow-green and roughened above by short white hairs and pale and glabrous below with the exception of a few axillary hairs, and at maturity thin but firm in texture, dark yellow-green, nearly smooth on the upper and pale yellow-green on the lower surface, 5-6.5 cm. long and 3.5-4 cm. wide, with stout yellow midribs and slender conspicuous veins extending obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, nearly terete, glandular, with minute stipitate mostly persistent glands, glabrous, 2-2.5 cm. in length. Flowers about 1.5 cm. in diameter, on long slender sparingly villose pedicels, in broad lax usually 8-14-flowered slightly hairy corymbs; calyx-tube narrowly obconic, slightly villose below the middle, glabrous above, the lobes gradually narrowed, acuminate, glandular serrate near the middle, glabrous on the outer and slightly hairy on the inner surface, reflexed after anthesis; stamens 7-10; anthers pale pink; styles 3, surrounded at the base by a narrow ring of white hairs. Fruit ripening the middle of September, on long drooping hairy pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, bright cherry red, lustrous, marked by large pale dots, 1-1.2 cm. long, 8-10 mm. wide; calyx enlarged, with a broad shallow cavity, and spreading slightly serrate lobes red and villose on the upper surface; flesh thin, yellow, dry and mealy; nutlets broad and rounded at the base, narrowed and rounded at the apex, ridged on the back, with a broad deeply grooved ridge, 6-7 mm. long and about 4 mm. wide.

An arborescent shrub 4-5 m. high, with a short trunk occasionally 15-18 cm. in diameter, spreading branches forming a wide open head, and stout zigzag branchlets marked by oblong pale lenticels, dark orange green and slightly hairy when they first appear, becoming pale chestnut-brown and very lustrous, light reddish brown the following season, and ashy gray in their third year, and armed with very numerous slender nearly straight light chestnut-brown shining ultimately dull gray-brown spines 7-8 cm. long.

Hillsides, Holderness, Grafton County, New Hampshire, at elevations of from 250 to 300 m. above the sea, *L. S. Webster* (no. 6 type 1 and 5), May and September 1903.

This species is named for its discoverer, Mr. Laurence J. Webster of Holderness.

Crataegus Lemingtonensis, n. sp. Leaves broadly ovate, acuminate, rounded or cuneate at the broad base, finely often doubly serrate above, with slender straight glandular teeth, and divided into 4 or 5 pairs of short narrow acuminate spreading lobes, about half grown when the flowers open during the last week in May and then thin, light yellow-green and roughened above by short white hairs and pale and glabrous below, and at maturity thin, glabrous, yellow-green and smooth on the upper, paler on the lower surface, 4-5 cm. long and wide, with thin yellow midribs, and slender primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, glabrous, glandular, with minute scattered persistent glands, 2-3 cm. in length; stipules linear, glandular, fading rose color, caducous; leaves on vigorous shoots often truncate or subcordate at the broad base, coarsely serrate, more deeply divided into broad acuminate lobes, often 6 cm. long and wide. Flowers about 1.2 cm. in diameter, on elongated slender villose pedicels, in compact mostly 7- or 8-flowered hairy corymbs; calyx tube narrowly obconic, coated with long matted pale hairs, the lobes slender, acuminate, slightly glandular-serrate, villose, reflexed after anthesis; stamens 10; anthers pink; styles 3 or 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening about the 10th of September, on slender drooping slightly villose pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, scarlet, lustrous, marked by occasional pale dots; calyx prominent, with a wide shallow cavity, and spreading or closely appressed lobes covered above with long white hairs, mostly persistent on the ripe fruit; flesh thick, yellow, soft and succulent; nutlets usually 3, gradually narrowed and rounded at the ends, ridged on the back, with a broad deeply grooved ridge, 6-7 mm. long and 4-5 mm. wide.

An arborescent shrub 4-5 m. high, with numerous ascending stems spreading into great thickets, and stout zigzag branchlets marked by

oblong pale lenticels, pale yellow-green and glabrous when they first appear, dull chestnut-brown during their first and light gray-brown in their second year, and armed with stout slightly curved chestnut-brown shining spines 4-5 cm. long and often pointed toward the base of the branch.

Hillsides, Essex County, Vermont; common; Lemington, Canaan, Bloomfield, *W. W. Eggleston* (no. 3408 type! Lemington); also the adjacent parts of New Hampshire.

Stamens 20; anthers pink.

***Crataegus insolens*, n. sp.** Leaves oblong-ovate, acute or acuminate, gradually or abruptly cuneate or rounded at the base, finely often doubly serrate, with straight or incurved teeth tipped with bright red glands, and sharply and slightly divided into 4 or 5 pairs of slender acuminate lobes, deeply tinged with red and covered above when they unfold with soft white hairs and glabrous below, more than half grown when the flowers open during the last week of May and then thin but firm in texture, pale yellow-green, still hairy and slightly roughened above and pale or glaucous below, and at maturity thin, dark green and nearly smooth on the upper and pale yellow-green on the lower surface, 4-5 cm. long and 3-3.5 cm. wide, and on vigorous shoots 6-7 cm. long and 5-6 cm. wide, with slender yellow midribs, and thin primary veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, slightly grooved, glandular near the apex, with minute mostly early deciduous glands, glabrous, 2.5-3 cm. in length. Flowers on long slender slightly villose pedicels, in usually 7-10-flowered hairy corymbs, the lower peduncles from the axils of upper leaves, their bracts and bractlets linear, glandular, fading brown, caducous; calyx-tube narrowly obconic, glabrous, or villose at the base, the lobes gradually narrowed from wide bases, acuminate, irregularly glandular-dentate near the middle, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 20; anthers small, pink; styles 3-5. Fruit ripening the middle of September, on erect reddish pedicels, in 1-3-fruited clusters, short-oblong, rounded at the ends, scarlet, lustrous, 1-1.2 cm. long and 8-10 mm. wide; calyx little enlarged, with a broad shallow cavity, and spreading and reflexed lobes, their tips often deciduous from the ripe fruit; flesh thin, yellow-green, dry and hard; nutlets 3-5, rounded at the obtuse ends, or when more than 3 narrowed at the ends and acute at the apex, ridged on the back with a broad often deeply grooved ridge, about 7 mm. long and 4 mm. wide.

A shrub 3-4 m. high, with numerous stems spreading into broad thickets, and slender nearly straight branchlets marked by oblong

pale lenticels, orange-green more or less tinged with red and slightly hairy, with scattered pale hairs, when they first appear, soon glabrous, bright chestnut-brown and very lustrous during their first season and light reddish brown the following year, and armed with numerous straight or slightly curved bright chestnut-brown shining spines 3.5–5 cm. long.

Hillsides, West Concord, Essex County, Vermont, *W. W. Eggleston* (no. 3403 type!), May and September 1903.

Crataegus Blanchardi, n. sp. Leaves ovate, short-pointed and acuminate at the apex, abruptly or gradually narrowed and cuneate at the entire base, finely often doubly serrate above, with straight glandular teeth, and divided into 4 or 5 pairs of narrow acuminate lateral lobes, when they unfold bronze color, glandular at the base, and covered with long white hairs more abundant on the upper than on the lower surface, nearly half grown when the flowers open about the 20th of May and then thin, yellow-green above and paler and sparingly villose below along the midribs and veins, and at maturity subcoriaceous, dark green and lustrous on the upper and pale yellow-green and almost glabrous on the lower surface, 4.5–6 cm. long and 4.5–5 cm. wide, with stout yellow midribs and slender veins arching obliquely to the points of the lobes; petioles slender, wing-margined at the apex, slightly grooved, at first villose, becoming glabrous, and glandular, with minute mostly caducous glands; stipules linear, glandular, fading brown, caducous; leaves on vigorous shoots rounded or truncate at the base, coarsely serrate, deeply lobed, 6–7 cm. long and wide, with stout broadly winged petioles glandular through the season. Flowers 1.5–1.7 cm. in diameter, on long stout densely villose pedicels, in thick-branched hairy corymbs, with oblong to linear obovate glandular bracts and bractlets often persistent until the flowers open; calyx-tube broadly obconic, covered below with long matted pale hairs and glabrous above, the lobes gradually narrowed from wide bases, short, acuminate, glandular-serrate near the middle, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 20; anthers pale pink, styles 3–5, surrounded at the base by a narrow ring of pale hairs. Fruit ripening at the end of September, on thick erect slightly villose pedicels, in few often 3–6-fruited clusters, short-oblong, full and rounded at the ends, dark cherry red, lustrous, marked by small pale dots; calyx little enlarged, with a wide shallow cavity, and spreading and appressed serrate lobes villose on the upper side and often deciduous from the ripe fruit; flesh thick, yellow, soft and pulpy; nutlets 3–5, rounded at the base, acute at the apex, ridged on the back, usually with a high narrow slightly grooved ridge, or when only 3 full and rounded at the ends, with a broad deeply grooved ridge, 6–7 mm. long and about 4 mm. wide.

A shrub 3–4 m. high, with numerous stems spreading into thickets,

and slender nearly straight branchlets marked by pale lenticels, dark orange-green when they first appear, light chestnut-brown and lustrous in their first winter, lighter-colored in their second season, and light gray-brown the following year, and armed with many stout slightly curved bright chestnut-brown shining ultimately dark gray-brown spines 4-5 cm. long.

Hillsides, Deerfield River Valley, Windham County, Vermont; common. Wilmington and Whitington, *W. H. Blanchard* (no. 7), August 1902, *W. W. Eggleston* (nos. 3451, 3452 type! and nos. 3446, 3449, 3453), May and September 1903.

This species is named for William Henry Blanchard, an industrious and critical student of *Crataegus* and *Rubus*, and the discoverer of other interesting New England plants.

INTRICATAE.

CRATAEGUS PECKII, Sarg., *RHODORA*, v. 63, (1903). A specimen gathered at Great Barrington, Massachusetts, by *Brainerd* and *Sargent* on October 4, 1902, was doubtfully referred by me in *RHODORA* to this species. The flowers subsequently gathered by Mr. Eggleston showed that the Great Barrington shrub is *C. Baxteri*, Sarg., a common species in the neighborhood of Albany, New York, and in western New York and eastern Pennsylvania. *C. Baxteri* was published in June 1903 in the *Proceedings of the Rochester Academy of Science* (iv. 107) but the Pennsylvania plant had been published by Ashe as *C. foetida* in *Ann. Carnegie Museum* (i. pt. iii. 389) in May 1902, and his name must supercede *C. Baxteri*.

ARNOLD ARBORETUM.

A NEW RANUNCULUS FROM NORTHEASTERN AMERICA.

B. L. ROBINSON.

ABOUT a year ago the writer in examining some of the *Ranunculi* of the *pedatifidus-pygmaeus* affinity noticed that a plant from Labrador and Gaspé Peninsula of Quebec, which has been passing as